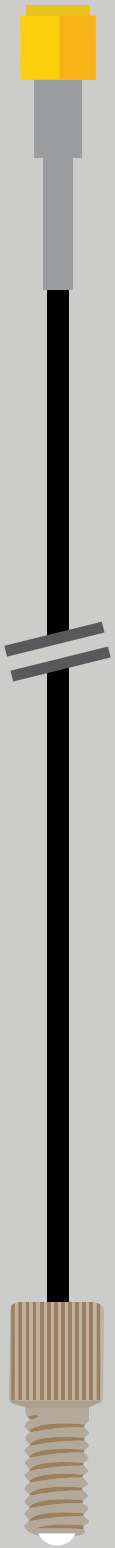
Atlas Scientific™
Environmental Robotics

V 1.1
Released 9/21

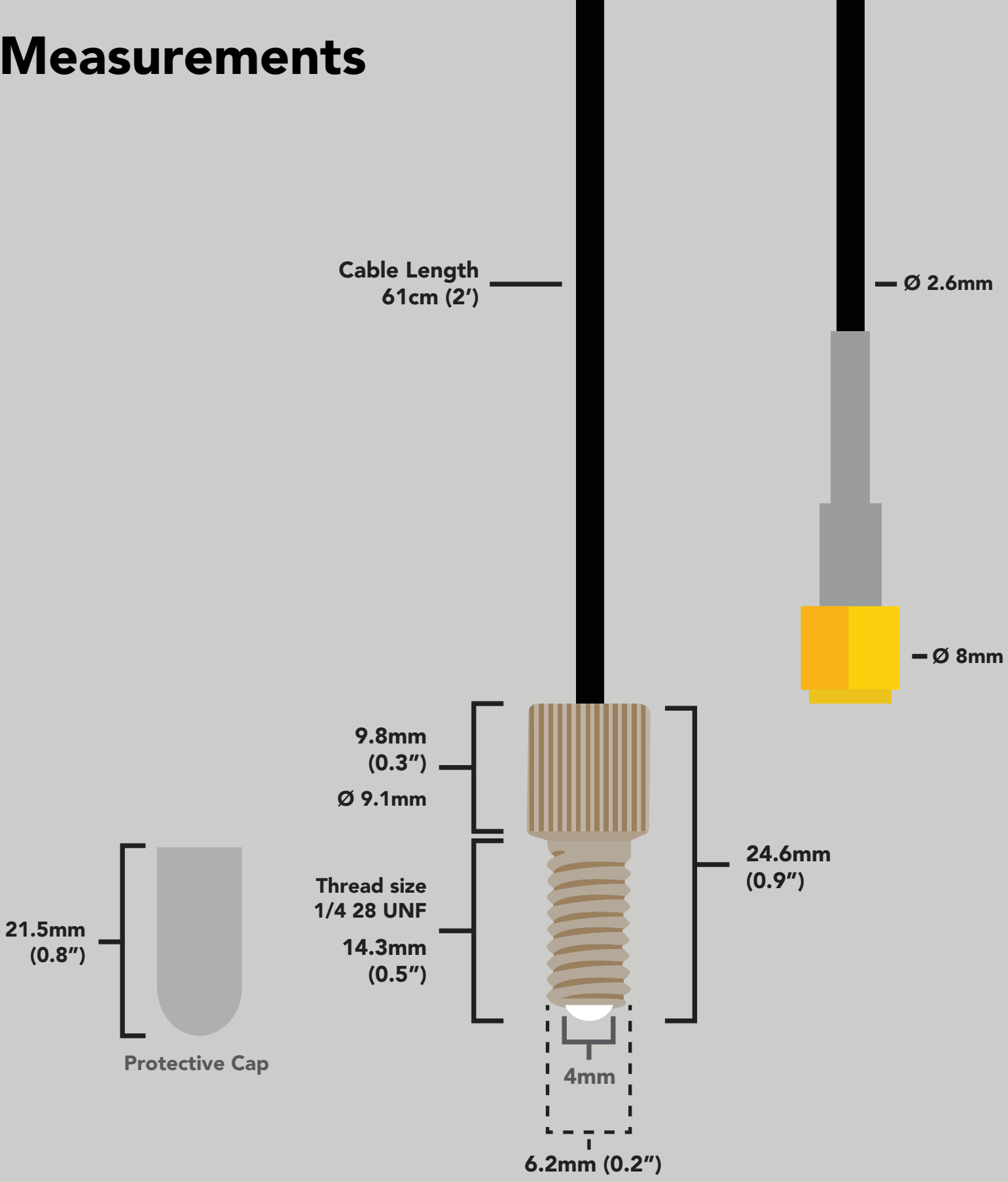
Micro
PT-1000
Temperature Probe

Reads	**Temperature**
Probe type	**Class A platinum, RTD**
Range	**-200˚C to 200˚C**
Accuracy	**+/- (0.15 + (0.002*t))**
Reaction Time	**90% in 10s**
Cable length	**61cm (2')**
Connector	**Male SMA**
Output	**Resistance (Analog)**
Life expectancy	**15 years**



RoHS COMPLIANT

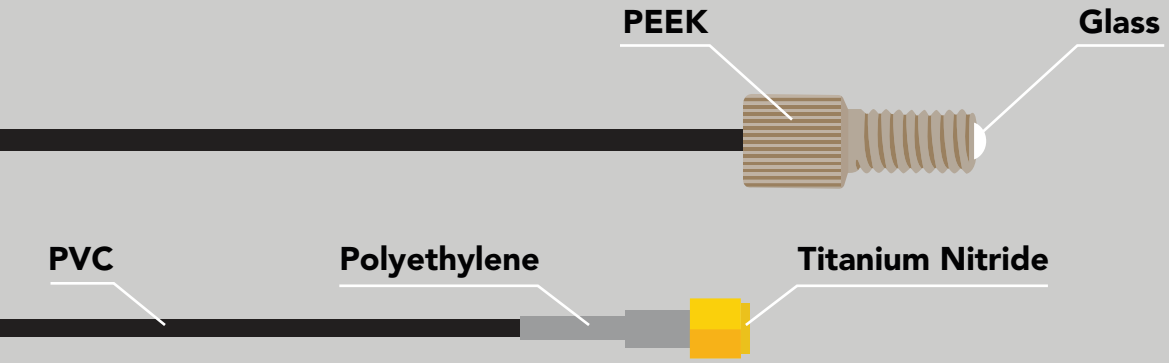
Measurements



Specifications

Cable length	**61cm (2')**
Weight	**16 grams**
Min cable temp	**-55°C**
Max cable temp	**125°C**
Sensing material	**Platinum**
Dimensions	**6.2mm x 24.1mm (0.2" x 0.9")**
SMA connector	**Male**
Sterilization	**Chemical only**
Food safe	**Yes**

Materials



This Micro PT-1000 probe can be *fully submerged* in fresh or salt water, up to the SMA connector *indefinitely*.

Typical applications

- Microfluidics

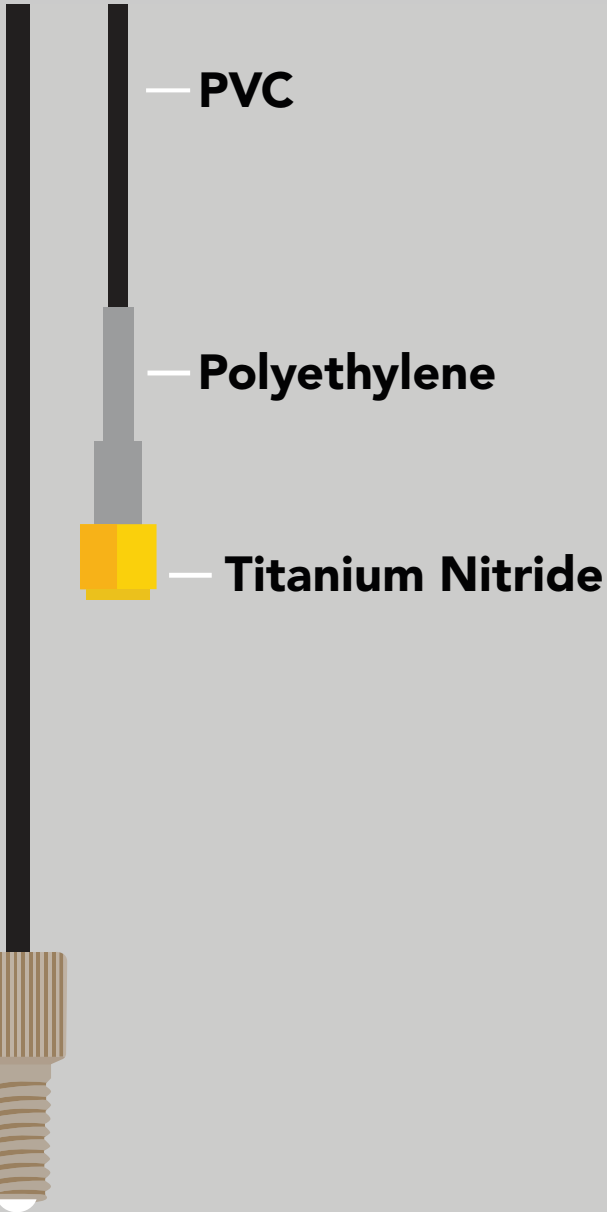
NSF/ANSI 51 Compliant

Food Safe

Atlas Scientific LLC, hereby certifies that,

Micro RTD Temperature Probe
Part # M-PT-1000

Complies with NSF/ANSI Standard 51



- **PVC**
  NSF/ANSI 51 Compliant
- **PEEK**
  NSF/ANSI 51 Compliant
- **Glass**
  NSF/ANSI 51 Compliant
- **Polyethylene**
  NSF/ANSI 51 Compliant
- **Titanium Nitride**
  NSF/ANSI 51 Compliant

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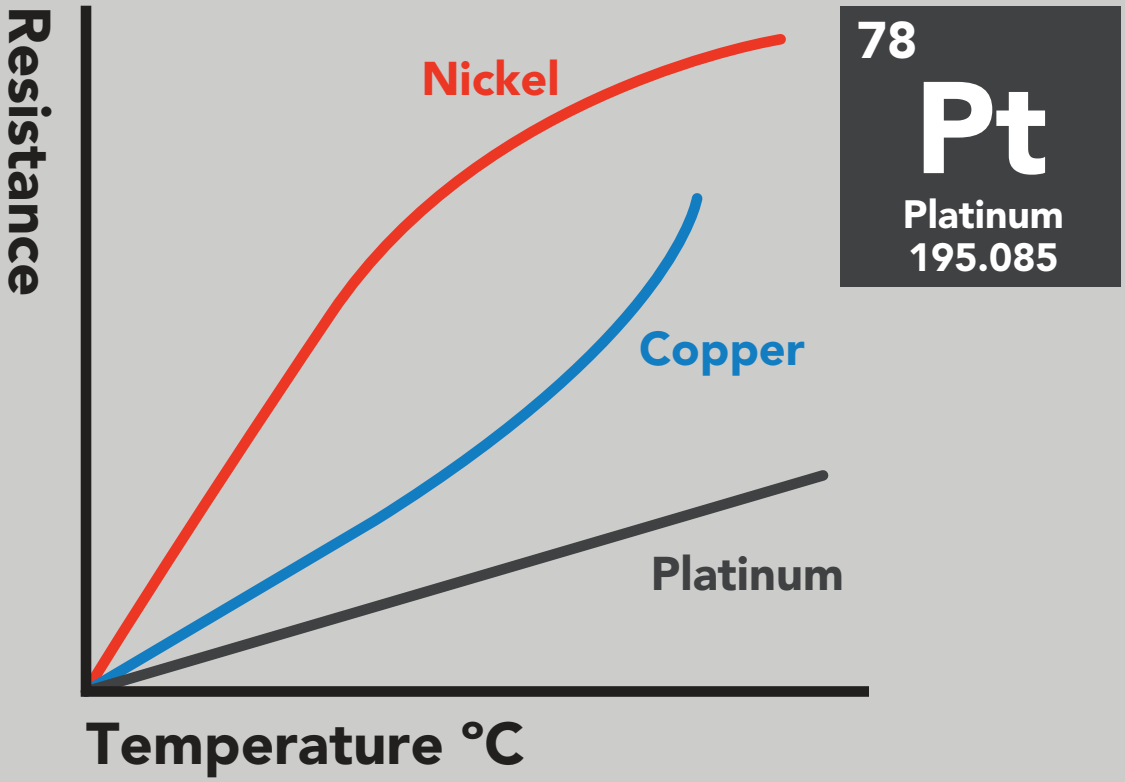
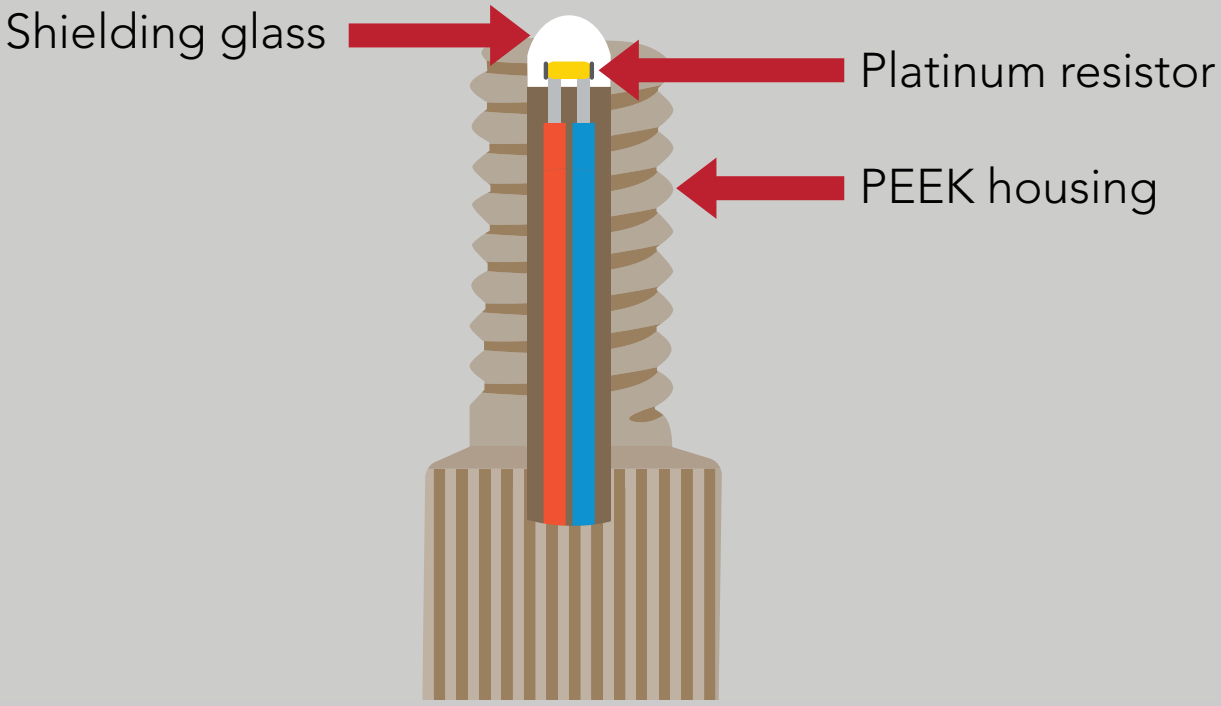
Operating principle

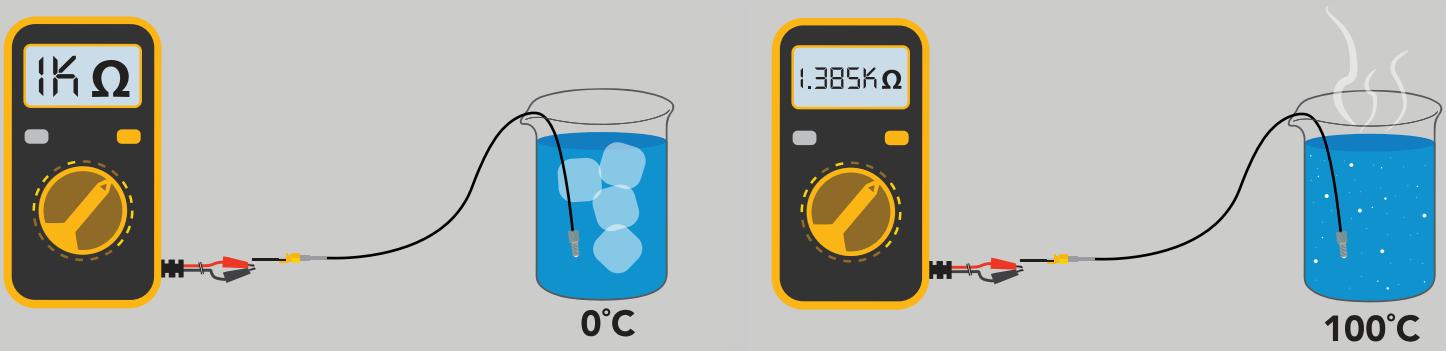
Unlike any other material, platinums correlation between resistance and temperature seems to be woven into the fabric of the universe. It is for this reason, that the platinum RTD temperature sensor is the industrial standard for temperature measurement.



78
Pt
Platinum
195.085



A PT-1000 temperature probe is a resistance type thermometer. Where PT stands for platinum and 1000 is the measured resistance of the probe at 0˚C in ohms (1k at 0˚C). As the temperature changes the resistance of the platinum changes.



To convert the resistance of the probe to temperature, use the following simplified equation:

$$T = -\frac{\sqrt{(-0.00232(R) + 17.59246)} - 3.908}{0.00116}$$

T = Degrees Celsius
R = Resistance measured from PT-1000 temperature probe

Below is a small table of temperatures and resistances, to help insure the above equation has been properly embedded into your code.

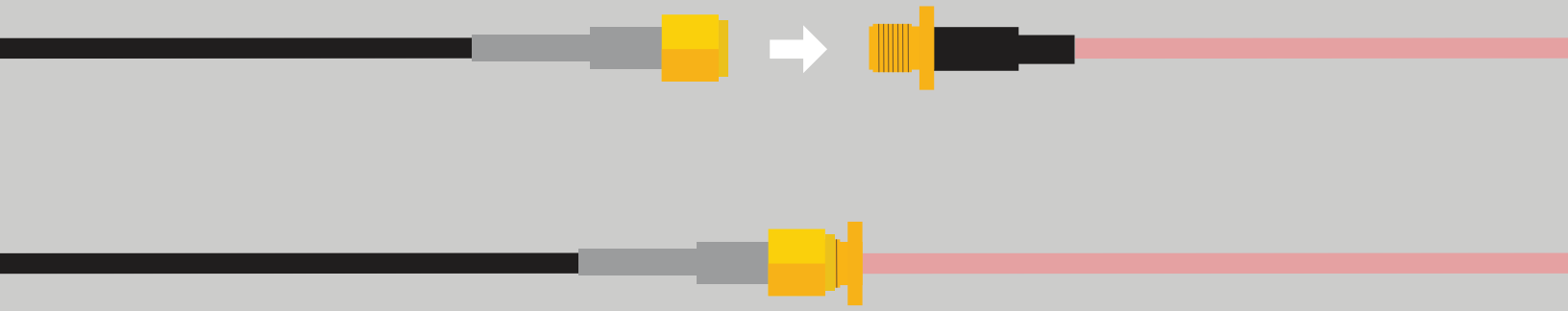
˚C	Ω	˚C	Ω	˚C	Ω
-10	960.9	7	1027.3	24	1093.5
-9	964.8	8	1031.2	25	1097.3
-8	968.7	9	1035.1	26	1101.2
-7	972.6	10	1039	27	1105.1
-6	976.5	11	1042.9	28	1109
-5	980.4	12	1046.8	29	1112.8
-4	984.4	13	1050.7	30	1116.7
-3	988.3	14	1054.6	31	1120.6
-2	992.2	15	1058.5	32	1124.5
-1	996.1	16	1062.4	33	1128.3
0	1000	17	1066.3	34	1132.2
1	1003.9	18	1070.2	35	1136.1
2	1007.8	19	1074	36	1139.9
3	1011.7	20	1077.9	37	1143.8
4	1015.6	21	1081.8	38	1147.7
5	1019.5	22	1085.7	39	1151.5
6	1023.4	23	1089.6	40	1155.4

Extending the probe cable length

You can extend the cable to greater than 100 meters with no loss of signal. Atlas Scientific has tested up to 300 meters without a problem, however you run the risk of turning your temperature probe into an antennae, picking up noise along the length of your cable.

If you want to extend your cable, we recommend that you use proper isolation, such as the ***Basic EZO™ Inline Voltage Isolator***, or the ***Electrically Isolated EZO™ Carrier Board***. Be sure to calibrate your probe with the extended cable.

Extending a probe cable can be easily done with our ***SMA Extension Cables***. Simply connect the SMA end of the probe to the Extension cable, and you are all set.



If you need to water proof a SMA connection, we highly recommend using a product like ***Coax-Seal*** to safely cover and prevent any water damage that may occur.